Resume

Dr. David A. Turcic
Mechanical Engineering Department
Portland State University
P.O. Box 751
Portland, OR 97207-0751

Research and Teaching Interests

Design and Analysis of High Speed Elastic Mechanisms, Motion Synthesis, Design for Manufacturing, Kinematics and Dynamics, System Design, Experimental Methods, Robotics, Automatic Controls, Mechatronics, Vibration Analysis, Computer Aided Design, Computer Aided Manufacturing, Geometric Modeling, Computer Graphics, Finite Element Methods, Numerical Methods, Applied Mathematics

Education

B.S. Mechanical Engineering, The Pennsylvania State University, May 1977

M.S. Mechanical Engineering, The Pennsylvania State University, August 1979
Thesis Adviser: Dr. Robert J. Williams
Thesis Title: A Point-Oriented Kinematic Analysis Procedure for Unconstrained Mechanisms with Interactive Computer Graphics Applications

Ph.D. Mechanical Engineering, The Pennsylvania State University, November 1982
Thesis Adviser: Dr. Ashok Midha
Thesis Title: A General Approach to the Dynamic Analysis of Elastic Mechanism Systems

Positions Held

September 1992 - present: Associate Professor (with tenure in 1994) of Mechanical Engineering, Portland State University, Portland, Oregon

September 1990 - August 1992: President Innovative Engineering Solutions (Engineering Consulting and Software Development Business) and Adjunct Associate Professor of Mechanical Engineering (Part time teaching position), Portland State University, Portland, Oregon

September 1989 - August 1991: Associate Professor (with tenure) of Mechanical Engineering, University of Wisconsin, Madison, Wisconsin

September 1985 - August 1989: Assistant Professor of Mechanical Engineering, University of Wisconsin, Madison, Wisconsin

June 1983 - August 1985: Assistant Professor of Mechanical Engineering and Mechanics, Drexel University, Philadelphia, Pennsylvania

September 1982 - May 1983: Visiting Assistant Professor of Mechanical Engineering, Pennsylvania State University, University Park, Pennsylvania

September 1979 - August 1982: Instructor, Mechanical Engineering, Pennsylvania State University, University Park, Pennsylvania

September 1977 - August 1979: Graduate Assistant Mechanical Engineering, Pennsylvania State University, University Park, Pennsylvania

Refereed Journal Publications

1. Midha, Ashok, David A. Turcic, "On the Periodic Response of a Cam Mechanism with Flexible Follower and Camshaft," ASME Journal of Dynamic Systems, Measurement and Control, Vol. 102, No. 4, December 1980, pp. 255-264.

2. Midha, Ashok, David A. Turcic, James R. Bosnik, "Creativity in the Classroom -A Collection of Case Studies in Mechanism Synthesis," Mechanism and Machine Theory, Vol. 19, No 1, 1984, pp. 25-44.

3. Turcic, David A., Ashok Midha, "Generalized Equations of Motion for the Dynamic Analysis of Elastic Mechanism Systems," ASME Journal of Dynamic Systems, Measurement and Control, Vol. 106, No. 4, Dec. 1984.

4. Turcic, David A., Ashok Midha, "Dynamic Analysis of Elastic Mechanism Systems, Part I: Applications," ASME Journal of Dynamic Systems, Measurement and Control, Vol. 106, No. 4, Dec. 1984.

5. Turcic, David A., Ashok Midha, James R. Bosnik, "Dynamic Analysis of Elastic Mechanism Systems, Part II: Experimental Results," ASME Journal of Dynamic Systems, Measurement and Control, Vol. 106, No. 4, Dec. 1984.

6. Krishnamurty, Sundar, David A. Turcic, "A General Method of Determining and Eliminating Branching in Planar Multiloop Mechanisms," ASME Journal of Mechanisms, Transmissions, and Automation in Design, Vol. 110, No. 4, Dec. 1988.

7. Nagarajan, Subra, David A. Turcic, "General Methods of Determining Stability and Critical Speeds for Elastic Mechanism Systems," Mechanism and Machine Theory, Volume 25, No. 2, pp. 209-223, 1990

8. Nagarajan, Subra, David A. Turcic, "Lagrangian Formulation of the Equations of Motion for Elastic Mechanisms With Mutual Dependence Between Rigid Body and Elastic Motions, Part I: Element Level Equations," ASME Journal of Dynamic Systems, Measurement, and Control, Vol. 112, pp. 203-214, June 1990.

9. Nagarajan, Subra, David A. Turcic, "Lagrangian Formulation of the Equations of Motion for Elastic Mechanisms With Mutual Dependence Between Rigid Body and Elastic Motions, Part II: System Equations," ASME Journal of Dynamic Systems, Measurement, and Control, Vol. 112, pp. 215-224, June 1990.

10. Nagarajan, Subra, David A. Turcic, "Dynamic Stability Considerations in Elastic Closed Loop Linkage Systems," ASME Journal of Mechanical Design, Vol. 114, No. 1, pp. 131-136, March 1992.

11. Nagarajan, Subra, David A. Turcic, "Experimental Verification of Critical Speed Ranges for Elastic Closed Loop Linkage Systems," ASME Journal of Mechanical Design, Vol. 114, No. 1, pp. 126-131, March 1992.

12. Krishnamurty, Sundar, David A. Turcic, "Optimal Synthesis of Mechanisms Using Nonlinear Goal Programming Techniques," Mechanism and Machine Theory, Vol. 27, No. 5, pp. 599-612, June 1992.

13. Krishnamurty, Sundar, David A. Turcic, "Branching Determination in Non-Dyadic Planar Multiloop Mechanisms," ASME Journal of Mechanical Design, Vol. 114, No. 2, pp. 245-250, June 1992.

14. Williams, Daniel W. , David A. Turcic, "A Point-Oriented Kinematic Analysis Procedure for Flexible Open-Loop Mechanisms," Mechanism and Machine Theory, Vol. 27, No. 6, pp. 701-714, July 1992.

15. Jablokow, Andrei, Subra Nagarajan, David A. Turcic, "A Modal Analysis Solution Technique to the Equations of Motion for Elastic Mechanism Systems Including the Rigid-Body and Elastic Motion Coupling Terms," ASME Journal of Mechanical Design, Vol. 115, No. 2, pp. 314-323, June 1993.

16. Jablokow, Andrei, John J. Uicker Jr., David A. Turcic, "Topological and Geometric Consistency in Boundary Representations of Solid Models of Mechanical Components,"ASME Journal of Mechanical Design, Vol. 115, No. 4, pp. 762-769, December 1993.

17. Jablokow, Andrei, John J. Uicker Jr., David A. Turcic, "Verification of Boundary Representations of Solid Models, "ASME Journal of Mechanical Design, Vol. 116, No. 2, pp. 666-668, June 1994.

Refereed Conference Papers

18. Turcic, David A., Robert J. Williams, "Positioning and Manipulation of Three-Dimensional Mechanisms using Interactive Computer Graphics and Stereo Pair Drawings," Proceedings of the Second International Computers in Engineering Conference, San Diego, California, August 1982, Vol. 1, pp. 81-87.

19. Turcic, David A., Robert J. Williams, "A Point-Oriented Kinematic Analysis Procedure for Spatial Open-Loop Mechanisms," Proceedings of the Third International Computers in Engineering Conference, Chicago, Illinois, August 1983, Vol. 2, pp. 157-167.

20. Turcic, David A., Ashok Midha, "Modeling of High-Speed Elastic Mechanisms for Vibration Response," Proceedings of the Third International Computers in Engineering Conference, Chicago, Illinois, August 1983, Vol. 2, pp. 81-92.

21. Turcic, David A., Andrei Jablokow, James Hamerslag, Susan Herman, "Computer Aided Design and Computer Aided Manufacturing Software for an Engineering Educational Environment," Proceedings of the 1987 ASME International Computers in Engineering Conference, New York, New York, August 1987.

22. Jablokow, Andrei G., David A. Turcic, T. M. Tan, "Tool path Simulation of APT Programs on Micro-Computers," Proceedings of the 1987 ASME International Computers in Engineering Conference, New York, New York, August 1987.

23. Krishnamurty, Sundar, David A. Turcic, "Nonlinear Goal Programming Techniques in the Synthesis of Mechanisms," Proceedings of the 1987 ASME Design Automation Conference, Boston, MA, September 1987.

24. Krishnamurty, Sundar, David A. Turcic, "DAMP - A General Purpose Optimization Program for Modeling, Analysis and Synthesis of Mechanisms," Proceedings of the 1991 ASME Computers in Engineering (CIE) Conference, San Jose, CA, August 1991.

25. Lee, Danny V., David A. Turcic, "Determination of the Coefficient of Restitution of a Bat-Ball System," Proceedings of the 2001 Society of Experimental Mechanics (SEM) Conference, pp. 129-132, Portland, OR, June 2001.

26. Turcic, David A., Swavik A. Spiewak, "Vibration Transmissibility Characteristics of a Newly Designed Bus Driver's Seat," Proceedings of the 2001 Society of Experimental Mechanics (SEM) Conference, pp. 133-136, Portland, OR, June 2001.

Invited Chapters in Books

1. Advanced Mechanism Design: Analysis and Synthesis Volume 2, by G. N. Sandor and A. G. Erdman , Prentice-Hall, 1984, Chapter 5, "Dynamics of Mechanisms: Advanced Concepts," Sections 5.19 - 5.30 ,"Analysis of High Speed Elastic Mechanisms", by Ashok Midha and David A. Turcic (Based on Turcic's Ph. D. Dissertation).

Teaching

Courses Taught

ME 66	Computer Programming and Numerical Analysis
ME 88	Engineering Senior Design I
ME 99	Engineering Senior Design II
E020	Senior Project Design I
E021	Senior Project Design II
E022	Senior Project Design III
EAS 213	Materials Science
EAS 215	Dynamics
ME 340	Introduction to Dynamic Systems
ME 311	Mechanical Vibrations
ME 351	System Dynamics
ME 490	SAE Student Formula Car Competition
ME 490	SAE Student Baja Car Competition
ME 491	Senior Capstone Design Sequence
ME 492	Senior Capstone Design Sequence
ME 493	Senior Capstone Design Sequence
ME 551	Engineering Analysis and Applied Mathematics
ME 452/552	Introduction to Control Engineering
ME 453/553	Control System Design
ME 463/563	Digital Control Systems

Development of New Courses

MEM 646	Introduction to CAD/CAM
ME 741	Analysis and Design of High Speed Mechanisms with Elastic Members
ME 964-2	Applied Computer Methods In Mechanical Engineering

ME 410/510 Mechanical Systems Design
ME 410/510 Controls Laboritory

Graduate Students

Completed Degrees

1. Tom Manning,	M.S.	9/84,	"Mechanism Synthesis"
2. Jim Hamerslag,	M.S.	6/85,	"CAD/CAM Software for use on Mico-computers"
3. Subra Nagarajan,	M.S.	9/85,	"Stability Considerations in Elastic Mechanism Systems"
4. Dan Williams,	M.S.	12/86,	"Interactive Manipulation of Three-Dimensional Information Using Stereoscopic Computer Graphics"
5. George Skupniewicz,	M.S.	5/87,	"Design and Implementation of a Compact Mechanical Shaker"
6. Sundar Krishnamurty,	Ph.D.	7/89,	"Multiple Objective Optimization Techniques in the Design of Mechanisms"
7. Andrei Jablokow,	Ph.D.	7/89,	"Validity of Boundary Representations of Solid Models"
8. Subra Nagarajan,	Ph.D.	7/89,	"Modeling and Stability of High Speed Elastic Mechanism Systems"
9. Dan Williams,	Ph.D.	6/90,	"Flexible Robotic Manipulator Control: Modeling, Simulation, and Experimentation"
10. Chung-Hang Pan,.	M.S.	6/90,	"Clearance Considerations in Elastic Mechanisms"
11. Cornel Danciu	M.S.	9/95	"Modeling of the Human Cardiovascular System"
12. Jeff Palmer	M.S.	3/96	"Comparison of Flight Control Systems"
13. Anthony Clinch	M.S.	3/97	"Tool Condition Monitoring: A Computational Approach"
14. Terrence Smith	M.S.	9/97	"Limitations of Methods for Determining the Position of the Center of Mass of a Human Subject Performing a Sit-Up"
15. Timothy Nuckolls	M.S.	6/2000	"Theortical and Experimental Model of a High Speed Drilling Process"
16. Jeff Lusardi	M.S.	6/2000	"Modeling and Control of Machines Mounted on Elastic Fondations"
17. Danny Lee	M.S.	6/2000	"Determination of the Coefficient of Restitution of a Bat-Ball System"

18. David Kloewer	M.S.	6/2002	"Study of Constrained Layer Damping Properties"
19. Wendell Calkins	M.S.	6/2002	"Design of an Instrimentation and Control System for A Two Link Flexible Manipulator"
20. Jermiah Smith	M.S.	6/2003	"Design and Fabrication of a Softball and Baseball Test Apparatus"
21. Mark B. Sommers	M.S.	6/2003	"Hip Fixation Methods"
22. Robert Beale	M.S.	3/2004	"Active Vibration Damping of Neonatal Patients in Transport"
23. Marcus Mohr	M.S.	3/2004	"Geometric Characterization of Human Ribs"

Service in Professional Organizations

- Reviewer for the Dynamic Systems and Control Division of NSF
- Reviewer for the following ASME Journals:
  - *Journal of Mechanisms, Transmissions, and Automation in Design*
  - *Journal of Dynamic Systems, Measurement, and Control*
  - *Journal of Engineering for Industry*
- Reviewer for *Mechanism and Machine Theory*
- Session Chairman and Vice Chairman, Design Automation and Mechanisms Conferences
- Former Member, Machine Dynamics Sub-committee of the ASME Mechanisms Committee